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travellers. The concluding third of the book contains a rich store of facts concerning the native and white inhabitants, education and missions, game, scientific fields of research still open for the student, trade and transportation, and some details of parts of Alaska outside the usual routes of travel. The book concludes with climatic and statistical tables, lists of the mountains, volcanoes and glaciers and a good index. It is both good reading and handy and dependable for reference; and with occasional revisions it will doubtless be long before it is supplanted in the field it is the first to fill.

Der Alpinismus und der Deutsch-Österreichische Alpenverein.

Von Dr. A. Dreyer. viii and 200 pp., Illustrations, and Indexes of Authors and Places. Marquardt & Co., Berlin, 1909.

The book contains the combined histories of Alpine sport and the German-Austrian Alpine Club. In the general part, the author has compiled an interesting collection of data illustrating the slow process of the wakening of man to the beauties of Alpine landscape, from the state of superstitious awe inspired by the real or supposed horrors and dangers of the mountains. The deterrent influence of the latter seems to have been so powerful that even Mt. Blanc was not known, at least has not been found recorded on any map, before the seventeenth century. The Swiss savant Scheuchzer did pioneer work in taking his students, from 1702 to 1711, on regular excursions to the mountains, the results of which were embodied in his "*Itinera Alpina*" (publ. 1723). But it was not until Rousseau's writings attracted multitudes to the places hallowed by the "*New Heloise*" that the Alps were artistically or touristically discovered.

After that, in the middle of the 18th century, travels to Switzerland began to become popular in France, Germany, and England: Klopstock, Wieland, Goethe, Byron immortalized what they saw in their verses, and Schiller's "*Wilhelm Tell*" was the first expression of the awakening general enthusiasm for Switzerland. Then began the era of the famous first ascensions of the higher peaks, inaugurated by Professor de Saussure, the conqueror of Mt. Blanc, and continued in a splendid series of exploits by the English Alpine Club. What this Club did for the Swiss Alps, the German and Austrian Clubs, later combined into one, did for the Bavarian and Austrian Alps. The main difference between the English and the continental organization is that the former includes only Alpinists of renown, while in the latter everybody interested in Alpine sport or study may become a member, which secures this club a large membership and large means, which are spent for improvement of the touristic conditions in its territory and for the publication of two magazines of scientific and popular character. The statutes and by-laws of this club are reprinted in the appendix, together with other matter valuable for the information of intending members and of alpinists in general.

M. K. G.

Conditions of Life in the Sea. A Short Account of Quantitative Marine Biological Research. By James Johnstone.

xiii and 332 pp., Chart, Illustrations, Bibliography, 7 Appendixes, and 2 Indexes. The Cambridge University Press, Cambridge, and G. P. Putnam's Sons, New York, 1908. Price, 9s.

Many of the ordinary facts of oceanography, and some of the features of the North Atlantic Ocean, are given as preliminary to the quantitative researches which form the author's main object in writing. In one of the preparatory chap-

ters is a general explanation of the categories, nekton, plankton and benthos, including reference to plant or animal groups which belong to these classes temporarily or permanently. Thus many free-swimming larvæ belong to the plankton but become benthic or nektonic in their adult existence. This arrangement provides for their distribution to the limits of suitable environment. The seasonal development of many of these organisms is shown to be very marked and is exhibited by instructive diagrams on pages 95-96.

The second part of the work opens with quantitative plankton investigations and gives the technical methods of such research—matters of more especial interest to the student of marine biology. The geographic interest culminates in the chapters on the "Census of the Sea" and the "Productivity of the Sea." The numbers of planktonic organisms for a column of water one square meter in cross section are given for the North Sea and they run far into the millions.

Among the more practical facts of such investigation is the determination of the number of eggs spawned by certain fish and the consequent number of females of those species which have produced them. Hensen and Apstein thus estimate the number of spawning cod, haddock, plaice, flounder and two other edible species in the North Sea in the spring of 1895. The estimate is 1,200,000,000 in round numbers. Adding the mature males and the immature fish of both sexes, the estimate rises nearly to 10,000,000,000. Confidence is expressed in the approximate correctness of this reckoning. The materials for such tentative enumerations are afforded by plankton investigations, fishing experiments and the commercial fishing statistics. The fishing fleets of European nations in 1904 landed nearly 1,000,000 tons of fish from the North Sea. This gave an average of 15 pounds per acre, per annum. All the fishing grounds of northern Europe yielded in the same year 1,500,000 tons. Morecambe Bay, taken as an illustration of inshore fishing grounds, yielded 79 pounds per acre in 1906, while the Conway mussel fishery afforded 8,700 pounds per acre.

Fresh water cultivated carp ponds in Germany yield from 58 to 141 pounds for each acre. Ringhole, on the coast of Lancashire, an area of 25 acres, produces in dry organic substance, of mussels redeposited there, 900 pounds per acre. Naturally, the estimate for the total productivity of such an area as the Baltic or the North Sea, offers a much more complicated problem. The author likens the plankton to cereals and land pastures, both furnishing food to animals which in turn offer support to man.

On the relative productivity of the sea and land, it is stated from available data, that 83.5 kilograms of beef may be produced per hectare as compared with 65 to 164 kilograms of carp, or 4,000 to 8,000 kilograms of mussel flesh. In terms of dry organic substance a hectare of land in comparison with the Baltic Sea plankton offers a ratio of 1,790 to 1,500 kilograms. It is regarded as unquestionable that the North Sea is richer in life than the adjoining lands. The sea has no sterile tracts and therefore for equal areas has undoubted advantage.

Without doubt, man may impoverish those forms of life which he seeks, even in the ocean, as shown by diminishing returns in North Sea fishing. Estimating from percentages of marked fishes recaptured on the same ground, it is believed that one-fourth of all the fish present may be caught by fishing operations. By comparing the number of cod or plaice eggs in a given area with the number which would have been spawned by captured females, results are obtained which command the confidence of the author. Considerable evidence is offered to show that life in cold seas is at least not less abundant than in warm latitudes. This

unexpected result, offers, as Kjellmann suggests, an insoluble problem, where an Arctic haul may bring up strong vegetation from the waters of an ice-covered ocean. The later chapters of the work relate to various phases of the metabolism of the sea.

The volume is one of the Cambridge Biological Series and contains a coloured map of the British Plateau and Norwegian sea, a number of illustrations in the text, several brief appendixes and an index. A. P. B.

Aux Indes et au Népal. Par Docteur Kurt Boeck, traduit par François Ricard. vii and 258 pp., and 58 Illustrations. Hachette & Co., Paris, 1907.

An extremely interesting and well-written volume on India and Ceylon. Many of the descriptions are exceedingly graphic and clear and the illustrations are superb. The author includes much that is of a personal nature that adds little to the value of the text, but his chapters are on the whole clear and his expressions are often almost epigrammatic. Yet, on the whole, the volume presents little that is new in reference to the countries treated, though it should be said that the descriptions in some cases include many interesting and valuable items not easily accessible. The facts are there, but the geographical thread that would make the volume geographically sound is often lacking. As an account of a traveller's personal impressions of a far country, the volume is a source of pleasure to the layman; as a source of reference, it is disappointing, partly because the spirit of the book does not tend to make it a reference volume and partly because of the lack of an index. R. E. D.

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